

### **ABSTRACT OF THE DISCLOSURE**

Fc fusion proteins of human G-CSF with increased biological activities relative to rhG-  
5 CSF on a molar basis are disclosed. The hG-CSF-L-vFc fusion protein comprises hG-  
CSF, a flexible peptide linker of about 20 or fewer amino acids, and a human IgG Fc  
variant. The Fc variant is of a non-lytic nature and shows minimal undesirable Fc-  
mediated side effects. A method is also disclosed to make or produce such fusion  
proteins at high expression levels. Such hG-CSF-L-vFc fusion proteins exhibit extended  
10 serum half-life and increased biological activities, leading to improved pharmacokinetics  
and pharmacodynamics, thus fewer injections will be needed within a period of time.